

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
15 July 2004 (15.07.2004)

PCT

(10) International Publication Number
WO 2004/059824 A1

(51) International Patent Classification⁷: H02M 3/335, 1/12 (74) Agent: REINHOLD COHN AND PARTNERS; P.O.Box 4060, 61040 Tel-Aviv (IL).

(21) International Application Number: PCT/IL2003/000606

(22) International Filing Date: 24 July 2003 (24.07.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 153606 24 December 2002 (24.12.2002) IL

(71) Applicant (for all designated States except US): LIGHTECH ELECTRONIC INDUSTRIES LTD. [IL/IL]; 9 Hamelacha Street, Northern Industrial Zone, 71520 Lod (IL).

(72) Inventor; and

(75) Inventor/Applicant (for US only): PATCHORNIK, Joshua [IL/IL]; 9 Etzion Street, 52383 Ramat Gan (IL).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

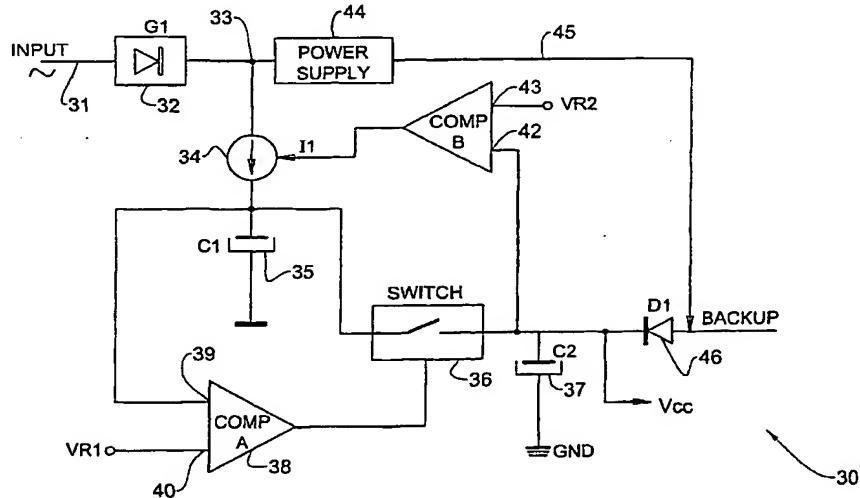
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ENERGY SAVING STARTUP CIRCUIT FOR POWER SUPPLY



(57) Abstract: A startup circuit (30) for a power supply (44), has an input (31) for connecting a source of high voltage thereto, and an output rail (33) for feeding rectified voltage to the power supply. A first energy storage device (35) is coupled to the output rail for storing energy when voltage is first applied to the input, and a second energy storage device (37) is coupled to an output of the power supply for storing energy when a voltage appearing at the output of the power supply reaches substantially steady state. A switching circuit (36, 50) is coupled to the first energy storage device and to the second energy storage device and is responsive to the first energy storage device having sufficient energy for transferring the energy to the second energy storage device and disconnecting the first energy storage device from the output rail.

WO 2004/059824 A1

INTERNATIONAL SEARCH REPORT

Internat'l Application No
PCT/IL 03/00606

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H02M3/335 H02M1/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H02M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE 42 27 183 A (GOSSEN GMBH) 24 February 1994 (1994-02-24) column 2, line 14 - line 40; figure	1-16
Y	US 6 246 596 B1 (YAMAZAKI HIROSHI) 12 June 2001 (2001-06-12) column 7, line 67 -column 8, line 10; figure 1	1-16
A	US 5 880 942 A (LEU FANG-JYE) 9 March 1999 (1999-03-09) the whole document	1-16

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the International filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the International filing date but later than the priority date claimed

- "T" later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the International search	Date of mailing of the International search report
19 November 2003	10/12/2003
Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Gentili, L

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/IL 03/00606

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
DE 4227183	A	24-02-1994	DE	4227183 A1		24-02-1994
US 6246596	B1	12-06-2001	JP	3236587 B2		10-12-2001
			JP	2001103743 A		13-04-2001
US 5880942	A	09-03-1999	DE	19748465 A1		01-10-1998